**REMARKS**

## I. Status of Claims

Prior to entry of this paper, Claims 1-44 were pending. Claims 1-44 were rejected. In this paper, Claims 1, 21, and 41 are amended. Claims 1-44 are currently pending. No new matter is added by way of this amendment. For at least the following reasons, it is respectfully submitted that each of the presently pending claims is in condition for allowance.

## II. Claim Rejections - 35 U.S.C. § 103

**Claims 1-13, 15, 17-33, 35 and 37-44** are rejected under 35 U.S.C. 103(a) as being unpatentable over Bhattacharya "Design Notes on Asynchronous I10 (aio) for Linux" (hereafter "Bhattacharya") in view of Chase et al., U.S. Publication No. 2004/0109410, (hereafter "Chase") further in view of Benhase et al., U.S. Patent No. 6,745,262, (hereafter "Benhase").

With this paper, **Claims 1, 21, and 41** have been amended to clarify the distinction, and thus patentability, between the claimed invention and the cited teachings of the applied prior art. These amendments particularly clarify the nature and basis upon which priorities in a request queue are changed. Support for this amendment can be found, for example, on page 5, lines 6-18 and page 11, lines 23-26 and page 14, table 2 of the specification as originally filed.

After carefully reviewing the applied references of Bhattacharya, Benhase, and Chase, it is respectfully submitted that various limitations of the claimed invention, as further claimed in Claims 1-44, are neither taught nor suggested by the teachings contained within this prior art. For example, Claim 1, as amended, at least includes the limitations of:

- *ordering the request queue based on priorities of the requests in the request queue*
- *changing the priorities of the requests in the request queue based on the number of events available at the event port, wherein the changing is further based on a specified number of events to be retrieved as part of at least one request received in response to at least one indication about the number of events available at the event port*

The Office Action mailed January 10, 2008 states that Bhattacharya does not explicitly teach such limitations (page 3, lines 16-20). However, on lines 13-15 of this same page of the Office

Action, Bhattacharya is also noted as teaching the *"ordering"* limitation. While this citation may be a mere matter of updating the grounds of rejection, it is respectfully submitted that Bhattacharya does not, in fact, teach such a limitation. First, it is respectfully noted that the sequencing of Asynchronous Input/Output (AIO) in Bhattacharya, which pertains an input/output ("i/o") request "that goes in" (top of page 7 in Bhattacharya), is not equivalent to *"a request to retrieve a specified number of events"*, as is further claimed for the *"request queue"* in Claim 1, which pertains to *"completed events"*. The cited and claimed "requests" are at opposite chronological stages of input/output processing. Further, section 5 on page 10 of Bhattacharya pertains to if "if multiple completion events have arrived on the queue" that are handled by the use of "separate queues" and an "aggregate (virtual) queue" or is "handled by the application"(section 5, pages 10-11). In contrast, the *"ordering"* limitation of the claimed invention, such as reproduced above for Claim 1, pertains to a *"request queue"*, which is further distinguished in the claimed invention from the source and posting of events *"available at the event port"*. Additionally, section 2.6.1 of Bhattacharya discusses a situation where available events are given to the first thread to pickup the events after a waking up multiple threads (pages 11-12 of Bhattacharya). Waking up multiple threads for received data and providing data on "first to pick up" does not suggest any form of priority for a waiting thread, much less an arrangement of the threads that is based on such a priority for each thread. In light of these remarks, it is respectfully submitted that Bhattacharya does not teach or suggest *"ordering the request queue based on priorities of the requests in the request queue"*, as is further claimed in at least Claim 1.

However, upon reviewing the cited reference of Benhase, it is respectfully submitted that the algorithm cited therein also does not teach or suggest this limitation of *"ordering"* as is further included in Claim 1. As noted in column 5, lines 22-32 of Benhase, the priority of received requests is adjusted based on two factors, the priority of the request to be queued (i.e., not already queued) and the entry location of a pointer into the queue (i.e., a numerical value associated with a pointer). Clearly, the priority of a request that is not yet in a circular buffer of entries does not teach or suggest *"priorities of the requests in the request queue"*, nor does a numerical value associated with a currently addressed buffer entry. Further, once an entry is determined by this algorithm of Benhase, then the received request is included in the entry based on the presence or absence of a

"linked list" (col. 5, lines 32-39). If a linked list exists at the calculated entry, the received request is merely added "at the end" (col. 5, line 38 of Benhase). This "at the end" handling of the received request verifies that any priority of other contents of the link list is simply not addressed nor involved with the overall processing scheme of Benhase. Additionally, Benhase notes that "new I/O requests are never queued in the same entry the server 4 is processing" (col. 5, lines 47-50), which further indicates a differentiation in Benhase between the placement of a received request and the priority of requests, if any, at the entry to which the head pointer points. Again, it is respectfully submitted that step 152 of Benhase does not determine, require, nor otherwise receive influence from requests contained within the circular buffer, including requests, if any, that may be associated with the location pointed to by the head pointer. Accordingly, it is respectfully submitted that Benhase does not teach or suggest "*ordering the request queue based on priorities of the requests in the request queue*" as is further claimed in at least Claim 1.

It is also respectfully submitted that the cited reference of Chase also does not teach or suggest the limitation of "*changing*", as is further included in Claim 1. On page 3, line 21 through page 4, line 3 of the Office Action of January 10, 2008, Chase was noted as teaching:

> "changing the priorities of the requests in the request queue based on number of tasks of each request and the available of the resource (change a queue priority requests based in the type f request and what system resource is approaching the overload condition; page 3, paragraphs 22-23)".

First, it is respectfully submitted that this cited concept is not what was claimed, for example, for the method of Claim 1. Even as a characterization of the actual limitation of Claim 1, such a recitation – and the corresponding teaching of Chase – fails to teach or suggest the claimed limitation of "changing" as a whole. The paraphrased "number of tasks of each request" is not equivalent to, nor suggestive of, the claimed "*a specified number of events to be retrieved*" as is further claimed in Claim 1. Specifically, the former involves what each request "requires the server 26 to perform" (para. [0023] of Chase), while the later involves "*completed events*" which are "*to be retrieved*", as further claimed in Claim 1. In Chase, the "tasks" are simply not equivalent to the claimed "events" as is further presented in Claim 1. Also, the characterized "the available of the resource" does not anticipate nor render obvious the "*number of events available at the event port*",

particularly since, similar to above, the former pertains to resources, such as storage resources, that are "approaching" the overload condition (para. [0004,0023] of Chase), while the latter pertains to "*completed events*" that are also already "*available*", as is further claimed in Claim 1. As such, it is respectfully submitted that such a characterization of the "*changing*" limitation in the Office Action does not anticipate nor render obvious the claimed invention, nor do the cited teachings of Chase.

Further, it is respectfully noted that the teachings of Chase do not involve a request that is received in a manner that is <u>responsive</u> to at least one indication about events that are available on the event port, as is further represented in amended Claim 1. Rather, the teachings of Chase comprise a system (30) that still receives request traffic (18), but does not pass along the received requests to the overloaded resource (para. [0022] of Chase). Chase discloses one situation where the sending client 16 is informed of an excluded request (para. [0023]), yet this passage fails to teach or suggest any form of responsive action by the client 16. As such, the requests from the sending client 16 are not equivalent to, nor suggestive of, "*at least one request received in response to information about the number of events available at the event port*" as is further claimed in Claim 1. Again, the system 36 of Chase "leaves requests 22 alone", but after the traffic 18 has been received, which does not teach or suggest "*a request received in response to information*" as is further claimed in Claim 1. Accordingly, for at least this additional reason, along with the fact that "resources available" are not equivalent to "*events available*", it is respectfully requested that the rejection of Claim 1, in light of the teachings of at least Chase, be withdrawn.

Finally, it is also noted that the cited teachings of Benhase and Chase apply to a different type of request in Bhattacharya than that to which they are directed. As such, they are not combinable to arrive at the claimed invention. Specifically, the asynchronous input/output (aio) system of Bhattacharya comprises two types of queues – an "aio queue" and a "completion queue". The former pertains to "when one initiates an async i/o operation" (Section 2.3, page 6 of Bhattacharya). The latter pertains to "where to place the event when it completes" (Section 2.5, page 8 of Bhattacharya). As noted above, neither teach or suggest the "*request queue*" for requests "*to retrieve a specified number of events from an event port to which completed events are posted*", as is further claimed in Claim 1. Regardless, the teachings of Benhase and Chase at best apply to the "aio queue", which again, is not the claimed "*request queue*", nor even the "completion queue"

of Bhattacharya. For example, the requests in Benhase pertain to "I/O requests to server 4 over the network 6" (col. 3, lines 61-64). Similarly, the requests of Chase may be "to access or perform some task over network 24, to access one or more servers 26, to access information in one or more storage units 28" (para. [0021] of Chase). Clearly, these requests of Benhase and Chase are requests that cause the events themselves to actually occur. They do not wait for the arrival of any such events, as further claimed in Claim 1, nor are they themselves the events of the "completion queue" as noted in the teachings of Bhattacharya. Such a distinction prevents the teachings of Benhase and Chase from being applied to the claimed invention, as well as alternate aspects of the teachings of Bhattacharya. Accordingly, it is respectfully submitted that these teachings of Benhase and Chase do not teach or suggest the claimed invention, nor would one of ordinary skill in the art be led to combine them with the teachings of Bhattacharya in a manner that would arrive at the claimed invention. Again, the teachings of Bhattacharya, and the input/output parallels with the cited teachings of Benhase and Chase, prevent otherwise interpretation of the requests and queues, including that which would be necessary to properly rejection the claimed invention of Claim 1 under 35 U.S.C. §103(a).

For at least the reasons presented herein with regards to Claim 1, it is respectfully submitted that the references of Bhattacharya, Benhase, and Chase, even in combination, do not teach or suggest the limitations of Claim 1, particularly when the effect of such limitations is considered as a whole. As such, it is respectfully request that the rejection of Claim 1 in under 35 U.S.C. §103(a) be withdrawn.

So far as **Claims 2, 6-8, 10-12, 18-22, 26-28, 30-32, 38-41 and 44** depend from Claim 1 or have been amended to include similar limitations, it is respectfully submitted that these claims are allowable for at least the same reasons listed above. In light of the above remarks, withdrawal of the rejections of each of these claims is respectfully requested.

With additional regard to **Claim 4**, it is respectfully reiterated that the Office Action has relied on a rationale that different elements in the teachings of Bhattacharya can be implemented to arrive at the priority-based limitations in the claimed invention (see treatment of Claim 4, page 5 of the Office Action). First, it is noted that the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the

desirability of the combination, per MPEP 2143.01. So far as the reference of Bhattacharya does not provide this suggestion or desirability, nor has any such desirability or suggestion been cited in the Office Action, it is respectfully submitted that a prima facie case of obviousness has not been established for at least Claim 4. Further, no logic has been set forth in the Office Action to support such a conclusion. Without such explanation, it is respectfully submitted that not even the exemplary rationales set forth in the recent *KSR* decision support such a finding. Accordingly, withdrawal of the rejection of Claim 4 under 35 U.S.C. §103(a) is also respectfully requested for at least this reason.

**Claims 14, 16, 34 and 36** are rejected under 35 U.S.C. 103(a) as being unpatentable over Bhattacharya in view of Chase and Benhase further in view of Lucovsky et al., U.S. Patent No. 6,223,207, (hereafter "Lucovsky").

However, so far as **Claims 14, 16, 34, and 36** depend from amended Claims 1 and 21, it is respectfully submitted that these claims are allowable for at least the same reasons listed above. In light of the above remarks, withdrawal of the rejections of each of these claims is respectfully requested.

## III. Conclusion

In view of the above amendment, applicant's representative believes the pending application is in condition for allowance.

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Respectfully submitted,

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